

## 1. THE TYPICAL LEAF OF THE TREE.

Epidermis: lateral cell-walls straight on ventral face, undulate on dorsal.

Chlorenchyma: two layers of compact palisade-cells, and a pneumatic tissue of about seven, more open strata.

Collenchyma: several hypodermal strata above and beneath the primary veins.

Stereome: a closed sheath around the mestome-strands of the primary veins.

Mestome-strand of midrib: three strands fused together so as to form an apparently single "concentric," in this case a perileptomatic strand with a central pith containing three resin-ducts.

## 2. THE LEAVES OF THE SEEDLING IN THE FIRST YEAR.

Epidermis: lateral cell-walls undulate on both faces.

Chlorenchyma: almost homogeneous of isodiametric cells, here and there with one layer of short, plump palisades; pneumatic tissue of four strata, more open.

Collenchyma: only one hypodermal layer beneath the midrib.

Stereome: a separate, open arch on the leptome-side, and a separate, small strand, covering the hadrome.

Mestome-strand of midrib: one single strand, arch-shaped, open on the ventral face, with one resin-duct.

CLINTON, MARYLAND.

## EXPLANATION OF PLATES 200 AND 201

PLATE 200. *LIQUIDAMBAR STYRACIFLUA* L. FIGS. 1-3, leaves of seedlings in the first year. FIG. 4, leaf of a small, unbranched specimen, 25 cm. in height. FIG. 5, leaf of a shrub, 1 m. in height. FIG. 6, leaf of a small specimen, 25 cm. in height. FIG. 7, leaf of a shrub, 1 m. in height, from the same branch as the leaf figured in FIG. 5.

PLATE 201. *LIQUIDAMBAR STYRACIFLUA* L. FIG. 8, leaf of a small, unbranched specimen with in all five leaves; the leaf figured is the basal. FIG. 9, leaf of a large tree, showing the typical shape. FIG. 10, leaf of a large tree, the lowermost on a branch near the inflorescence; the other leaves were normal, five-lobed. All the figures are two-thirds of the natural size.

## EUPHORBIA ESULA AS A WEED IN NEW YORK STATE.

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AMONG that host of troublesome exotic weeds which have become established in our country is the Leafy Spurge, *Euphorbia Esula* L. Apparently this perennial weed is not only very persistent where it has taken a foothold, but is spreading rapidly into new areas.

Our manuals and floras give only a very imperfect idea of its distribution, but indications are that it may be already widely dis-



tributed in the northern United States. Available records indicate that it has been found in Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Michigan, Wisconsin, Minnesota, North Dakota, and Colorado. House<sup>1</sup> did not include *Euphorbia Esula* in his "Flora of New York State." Taylor<sup>2</sup> in the "Flora of the Vicinity of New York" mentions it as occurring as a rare weed at Redding, Connecticut, but does not credit it to New York State.

Leafy Spurge is a perennial which produces large numbers of viable seeds and also spreads by slender creeping roots which send up new shoots in great profusion. Propagation by the roots is very rapid, especially when they are broken and dragged about a field with harrows and cultivators. Every piece of root, even though it is only one centimeter long, is capable of producing a new plant and a new center from which the weed spreads. In most places where it has become established, it has become a very serious pest in meadows as well as in cultivated land.

The following notes upon the distribution of this weed in New York State are based largely upon field observations by the writer and inquiries and specimens from farmers who have been confronted with the problem of its control. Unless otherwise indicated, the numbers refer to specimens collected by the writer and deposited in the herbarium of Cornell University.

ORANGE COUNTY: overrunning meadows and fields near Rock Tavern, New Windsor, 15,735 (1924); common and spreading in fields, meadows and along roadsides west of Newburgh, 15,736 (1924); in meadows and along roadside near the Middletown country club, Middletown, 15,737 (1924). ULSTER COUNTY: common in a meadow near Kingston, *H. P. Beals* (1925). SULLIVAN COUNTY: common in meadows and along roadside south of Bloomington, 16,217 (1925). DUTCHESS COUNTY: common and spreading in grain fields, meadows and pastures, *H. I. Hall* (1922-1927). COLUMBIA COUNTY: a large patch in a meadow near Hillsdale, 16,216 (1925). ALBANY COUNTY: common in an oatfield at Guilderland Center, *H. D. House*, New York State Herbarium, 10,787 (1925). HERKIMER COUNTY: in a field near Little Falls, *C. A. Casely*. ST. LAWRENCE COUNTY: one colony in a hayfield near Potsdam, probably extinct, *O. P. Phelps*, C. U.,<sup>3</sup> (1925). TOMPKINS COUNTY: on a hillside north of Ithaca, *L. H. MacDaniels & A. J. Eames*, C. U., 4493 (1915). CAYUGA

<sup>1</sup> House, H. D. Annotated list of the ferns and flowering plants of New York State. N. Y. State Mus. Bull. 254. 1924.

<sup>2</sup> Taylor, Norman. Flora of the Vicinity of New York. Mem. N. Y. Bot. Gard. 4: 1-683. 1915.

<sup>3</sup> C. U. = Herbarium of Cornell University.



COUNTY: in cultivated fields and grassland, about three miles east of Aurora (1929). According to a local resident it was first noticed here in 1923. GENESEE COUNTY: abundant along roadside near Bergen, *A. E. Perkins*, C. U. (1929).



Fig. 1. Distribution of *Euphorbia Esula* in New York State.

These distribution records, also indicated on the map in figure 1, show that the Leafy Spurge is already known to be established in at least eleven counties in New York State: it is most abundant and troublesome in the southeastern counties but it is also found in scattered counties extending northward to the St. Lawrence River and westward almost to Lake Erie. More intensive field observations would probably show that it is already in some of the other counties. The rate at which this weed produces seed and spreads indicates that unless extreme measures are taken to eradicate new infestations, it is likely to become a much more common weed pest in the future.

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